



Reference: 001133.207

July 8, 2005

Ms. Kasey Ashley
California Regional Water Quality Control Board
North Coast Region
5550 Skylane Blvd., Suite A
Santa Rosa, CA 95403

**Subject: Second Quarter 2005 Groundwater Monitoring Report, Ukiah Hot Plant,
Ukiah, California; Case No. 1NMC545**

Dear Ms. Ashley:

Here is the Second Quarter 2005 Groundwater Monitoring Report for the Ukiah Hot Plant, 4201 North State Street; Ukiah, Mendocino County, California. This report includes a brief discussion on the background of the site, vicinity information, a description of the work performed, and a summary of the results of the quarterly monitoring event. This work is being performed at the request of the California Regional Water Quality Control Board, North Coast Region (RWQCB).

Introduction

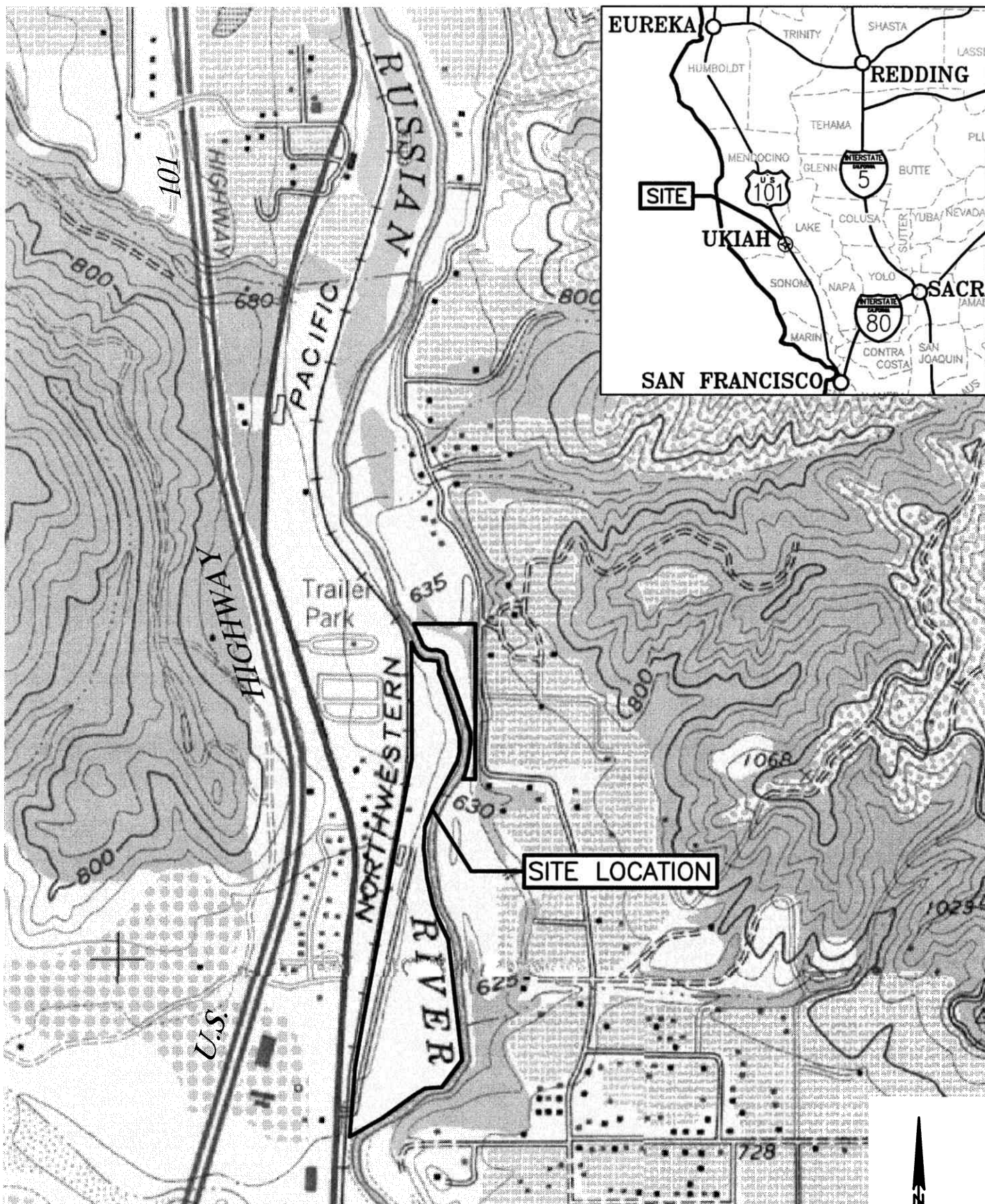
The Ukiah Hot Plant is located approximately 2 miles north of Ukiah, between the Russian River and State Highway 101 (Figure 1). The overall subject property encompasses in excess of 40 acres, of which the 4 southern parcels (APNs 167-260-05, 167-230-15 & 16, 167-190-24) are occupied by the asphalt batch and gravel processing plants, gravel stockpiles, and other support facilities (referred to in general as the "batch plant site"). The remaining 2 parcels (APNs 168-120-01 & 04) consist of approximately 3.8 acres of gravel bar and stream channel, located on the east side of the Russian River near the north end of the batch plant site.

The site is bound to the north, east, and south by the Russian River, and to the west by commercial/residential development located along North State Street. The elevation of the site is approximately 640 feet above Mean Sea Level (MSL).

Background

Granite Construction is the current owner and operator of the facility having purchased the facility from Parnum Paving. Prior to Parnum Paving, several different owners/operators have been at the facility over the past 40 years. The facility consists of sand and gravel aggregate operations, an asphalt drum-mix plant (hot plant), an equipment yard, and a maintenance shop. Facility operations include the stockpiling of gravel and rock material, crushing, washing, and sorting of the sand and aggregate used for general roadway construction, and for the incorporation of processed aggregate into asphalt concrete. The operations also include the fueling, maintenance, and storage of equipment used to transport and utilize the paving materials, as needed.

On July 9 through 11, 2001, SHN Consulting Engineers & Geologists, Inc. (SHN) supervised the installation of 28 soil borings and 50 test pits. Soil borings and test pit locations were selected by



SOURCE:
UKIAH USGS 7.5 MINUTE QUADRANGLE

1"=1000'±

SHN or Granite Construction and then cleared by NORCAL Geophysical to minimize damage to existing underground utilities. Soil borings were drilled using a truck mounted Geoprobe® rig operated by Fisch Environmental of Valley Springs, California. Borings were extended to a maximum depth of 23 feet Below Ground Surface (BGS). One hand-augered boring was advanced to 6 feet BGS behind the shop. Test pits were excavated using a backhoe or excavator and extended to a maximum depth of 11 feet BGS. Complete results of the investigation are presented in the report entitled *Environmental Site Assessment, Ukiah Hot Plant, Ukiah, California*. (SHN, 2003).

On March 8 and 9, 2004, SHN supervised Weeks Drilling of Sebastopol, California in the installation of three groundwater-monitoring wells in the vicinity of the hot plant (SHN, 2004).

Geology

Geology in the vicinity of the site consists of Quaternary Alluvium underlain by Plio-Pleistocene age alluvial and lacustrine deposits locally known as the Ukiah Beds. The Ukiah Beds are composed of low permeability materials consisting of moderately indurated beds of clayey and sandy gravels with subordinate amounts of clayey sands and sandy clays (NGI, 1987).

In general, sediments in the vicinity of the hot plant consist of varying thicknesses of gravelly fill with minor asphalt debris underlain by interbedded sandy gravels and fine to medium grained sands or silty sands. Depth to bedrock varied from approximately 15 feet to 17 feet BGS. The bedrock consists of moderately indurated olive green siltstone or claystone.

Field Activities

Monitoring Well Sampling

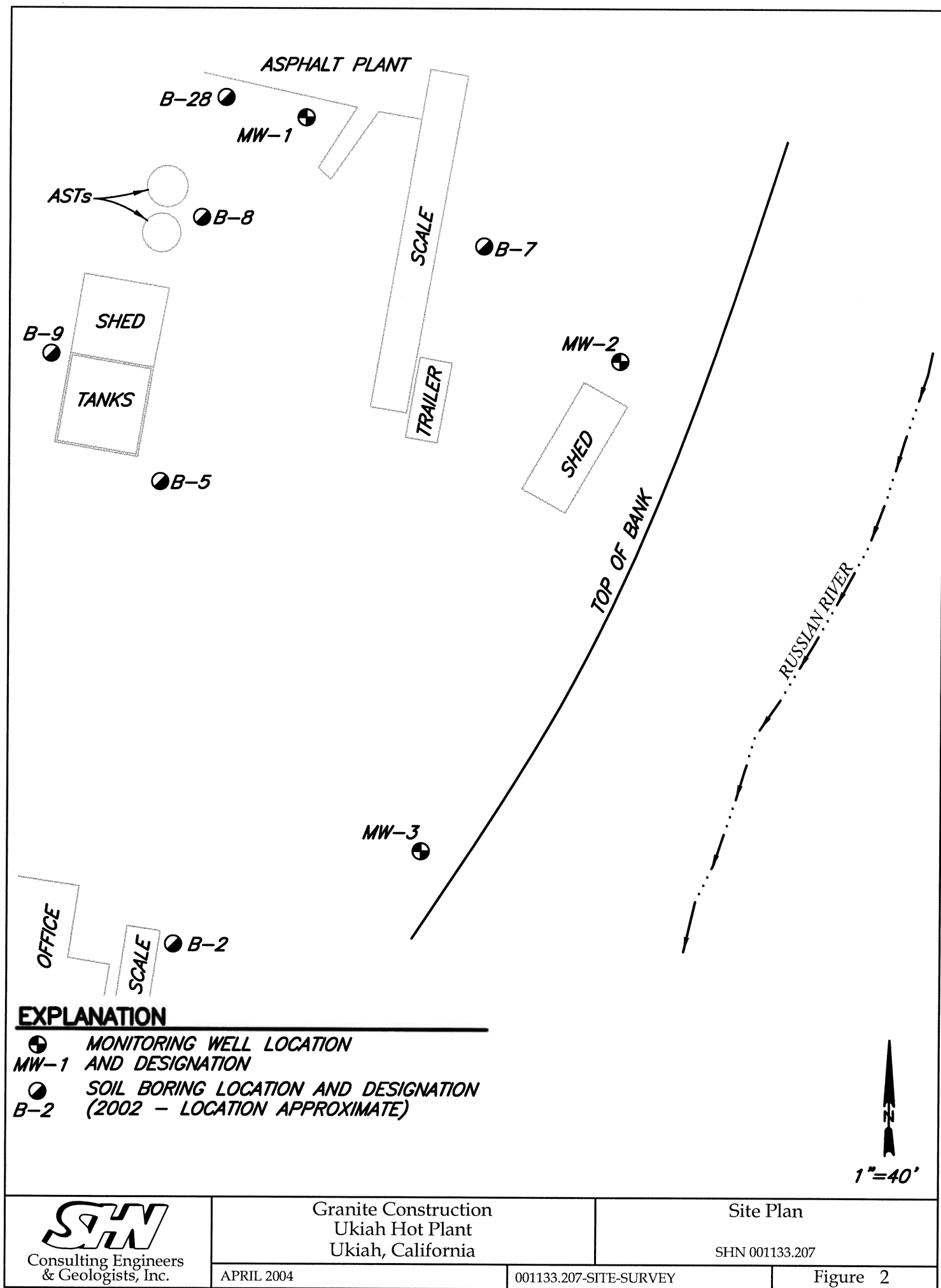
On June 13, 2005, SHN conducted quarterly groundwater monitoring of site monitoring wells (Figure 2). Prior to sample collection, each well was checked for free product (none was observed), and measured for depth to groundwater to the nearest 0.01 foot, utilizing an electronic water sensor. Approximately three casing volumes of water were purged from three monitoring wells using a disposable bailer. Electrical conductivity, pH, and temperature were monitored periodically during purging activities using portable instrumentation. Each groundwater well was also monitored for Dissolved Oxygen (DO), Oxidation-Reduction Potential (ORP), and Dissolved Carbon Dioxide (DCO₂).

Groundwater samples were collected from the three monitoring wells using disposable polyethylene bailers, and transferred into laboratory-supplied bottles. The water samples were then labeled, stored in an iced cooler, and transported to the analytical laboratory under proper chain-of-custody documentation. Groundwater monitoring data sheets are included in Attachment 1.

Laboratory Analysis

Each groundwater sample was analyzed for:

- Total Petroleum Hydrocarbons as Motor Oil (TPHMO) and as Diesel (TPHD) in general accordance with United States Environmental Protection Agency (EPA) Method No. 8015M.
- Dissolved iron and dissolved manganese in general accordance with EPA Method No. 200.7.



Consulting Engineers
& Geologists, Inc.

Granite Construction
Ukiah Hot Plant
Ukiah, California

Site Plan

SHN 001133.207

APRIL 2004

001133.207-SITE-SURVEY

Figure 2

- Bicarbonate alkalinity, carbonate alkalinity, hydroxide alkalinity, and total alkalinity in general accordance with Standard Method SM2320B.
- Nitrate and sulfate in general accordance with EPA Method No. 300.0.

Groundwater samples were submitted to Alpha Analytical Laboratories Inc., of Ukiah, California.

Equipment Decontamination Procedures

All small equipment that required on-site cleaning was cleaned using the triple wash system. The equipment was first washed in a water solution containing Liquinox® cleaner, followed by a distilled water rinse, then by a second distilled water rinse.

Investigation-Derived Waste Management

Water used in the decontamination of equipment, tools, and all purge water was contained in approved DOT 17 E/H, 55-gallon drums. The water was transported to SHN's purge water storage facility and will be discharged, under permit, to the City of Eureka wastewater collection system. Approximately 18 gallons of water were generated during this monitoring event. A discharge receipt will be included in the next quarterly monitoring report. A discharge receipt for water generated during the previous monitoring event is included in Attachment 1.

Groundwater Monitoring Results

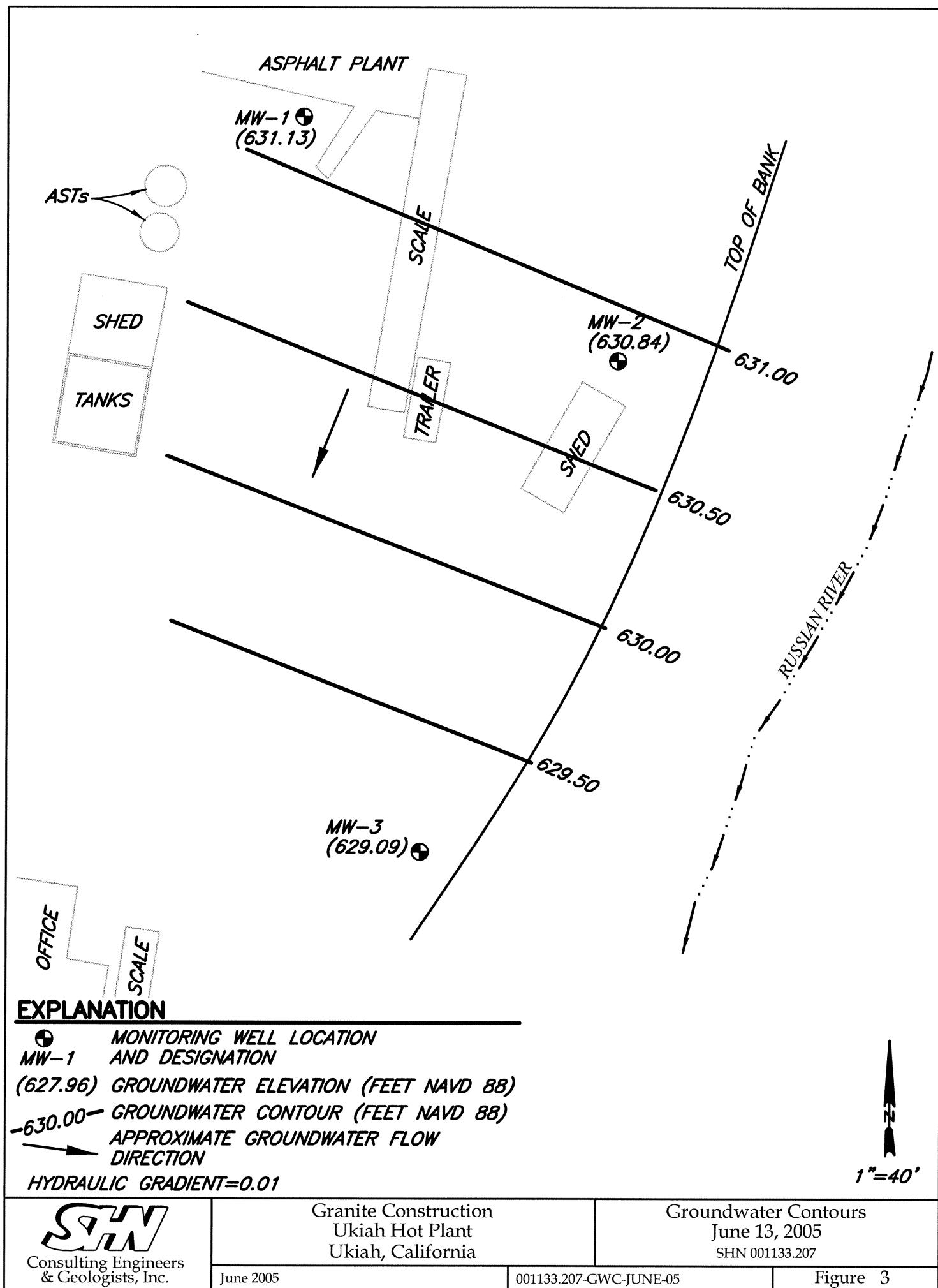
Hydrogeology

Depth to groundwater measurements were collected on June 13, 2005. The direction of groundwater flow on June 13, 2005 was to the south-southwest with an approximate gradient of 0.01 (Figure 3). Groundwater elevations are presented in Table 1. Historic groundwater elevation data are included in Attachment 2.

Table 1 Groundwater Elevations, June 13, 2005 Ukiah Hot Plant, Ukiah, California			
Sample Location	Top of Casing Elevation (feet)¹	Depth to Water (feet)²	Groundwater Elevation (feet)¹
MW-1	645.05	13.92	631.13
MW-2	642.56	11.72	630.84
MW-3	643.71	14.62	629.09
1. Referenced to NAVD88		2. Below top of casing	

Groundwater Analytical Results

Groundwater was sampled from each well on June 13, 2005. Analytical results are presented in Table 2 and Figure 4.



TPHMO and TPHD were not detected in the groundwater samples from monitoring wells MW-1, MW-2, and MW-3. Historic groundwater analytical data are included in Attachment 2. The laboratory analytical reports are presented in Attachment 3.

Table 2 Groundwater Analytical Results, June 13, 2005 Ukiah Hot Plant, Ukiah, California (in ug/L)¹		
Sample Location	TPHMO²	TPHD²
MW-1	<100 ³	<50
MW-2	<100	<50
MW-3	<100	<50
1. ug/L: micrograms per Liter 2. Total Petroleum Hydrocarbons as Motor Oil (TPHMO) and as Diesel (TPHD) analyzed in general accordance with EPA Method No. 8015M 3. <: Denotes a value that is "less than" the method detection limit.		

Natural Attenuation Parameters

DO, ORP, and DCO₂ were measured in the monitoring wells prior to sampling. Results are presented in Table 3. Historic DO, ORP, and DCO₂ measurement results are included in Attachment 2.

Table 3 DO, DCO₂, and ORP Measurement Results, June 13, 2005 Ukiah Hot Plant, Ukiah, California			
Sample Location	DO¹ (ppm)²	DCO₂³ (ppm)	ORP⁴ (mV)⁵
MW-1	2.0	52	42
MW-2	2.0	52	46
MW-3	2.0	54	45
1. DO: Dissolved Oxygen, field measured using a field test kit 2. ppm: Measurement concentration, in parts per million 3. DCO ₂ : Dissolved Carbon Dioxide, field measured using a field test kit 4. ORP: Oxidation-Reduction Potential measured using portable instrumentation 5. mV: millivolts			

Several geochemical parameters were analyzed from each groundwater sample to determine if the parameters were consistent with expected trends in parameters where natural degradation of hydrocarbons is occurring. Results are presented in Table 4.

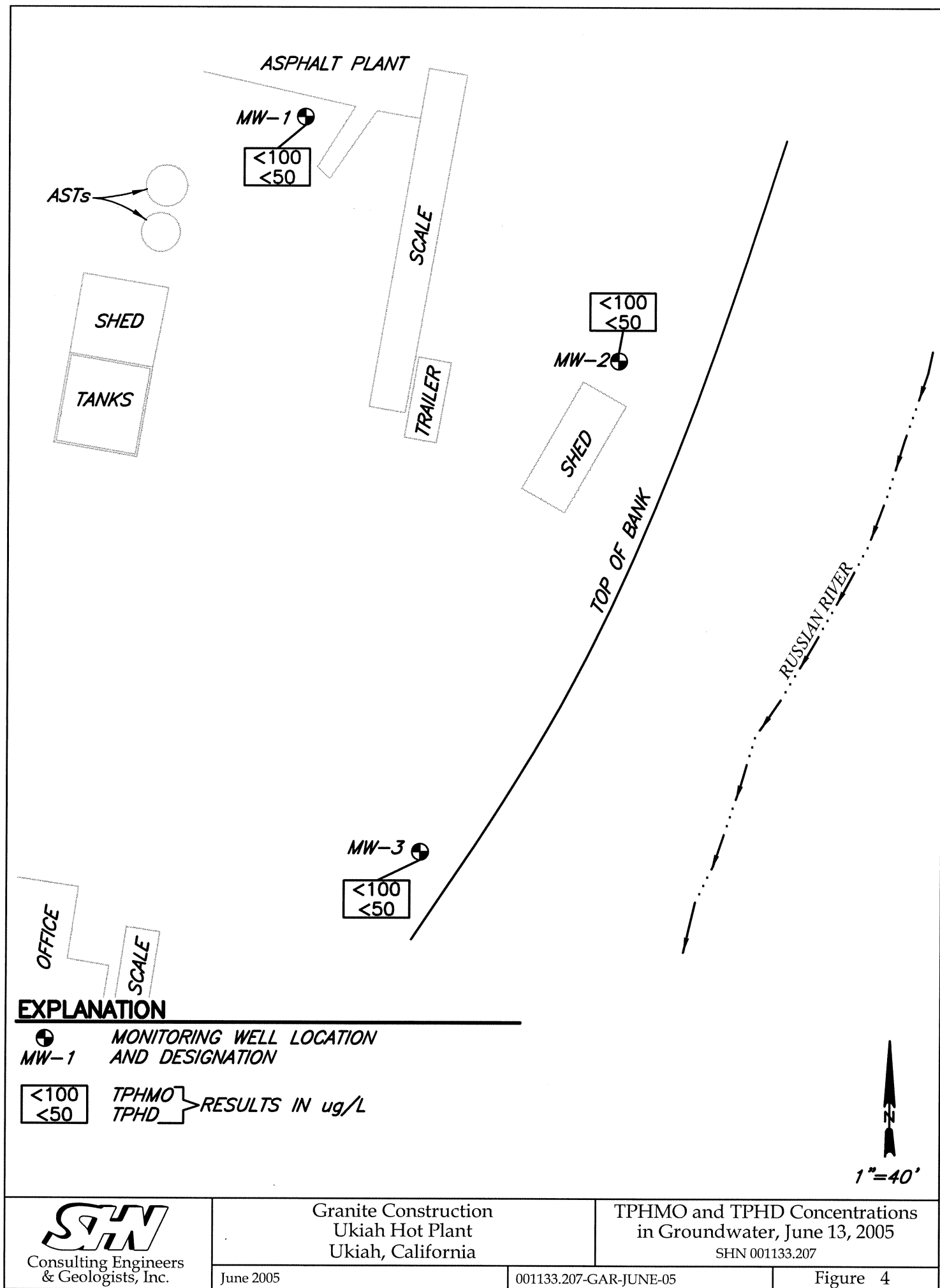


Table 4 Groundwater Geochemical Analytical Results, June 13, 2005 Ukiah Hot Plant, Ukiah, California (in mg/L)¹								
Sample Location	Dissolved Iron	Dissolved Manganese	Nitrate	Sulfate	Bicarbonate Alkalinity	Carbonate Alkalinity	Hydroxide Alkalinity	Total Alkalinity
MW-1	<0.10 ²	0.79	<1.0	9.0	110	<5.0	<5.0	110
MW-2	<0.10	0.52	<1.0	40	120	<5.0	<5.0	120
MW-3	<0.10	0.20	<1.0	27	130	<5.0	<5.0	130
1. mg/L: milligrams per liter 2. <: Denotes a value that is "less than" the method detection limit.								

Monitored Natural Attenuation (MNA) is the reduction in mass or concentration of a chemical in groundwater over time or distance from the source of contamination due to naturally occurring physical, chemical, and biological processes (Barden, 2002). These processes include dispersion (dilution), sorption of contaminants to soil particles, volatilization, biodegradation of contaminants by naturally occurring organisms, or abiotic degradation/transformation (Wiedemeier, 2002).

Three lines of evidence (Wiedemeier et al., 1999) that can be used to support MNA are:

- documented loss of contaminants in monitoring wells over time,
- contaminant and geochemical analytical data, and
- direct microbiological evidence.

Table 5 shows trends expected in groundwater when MNA is occurring, and compares data from MW-2 to assumed background conditions at MW-3. DO, DCO₂, and ORP measurements were very similar during the second quarter 2005 monitoring event, and no petroleum hydrocarbons were detected in any groundwater samples analyzed. In comparing historic DO, DCO₂, and ORP measurement results, in general, the trends observed match the expected trends where natural attenuation of petroleum hydrocarbons is occurring. Dissolved iron and nitrate were not detected in any of the groundwater samples, therefore, no comparison of trends could be made. Dissolved manganese concentrations followed the trend expected where natural attenuation of petroleum hydrocarbons is occurring. Sulfate concentrations did not follow the expected trend where natural attenuation of petroleum hydrocarbons is occurring, however, sulfate reduction is a less favorable reaction when compared to manganese reduction (Wiedemeier et al., 1999).

Based on the decline in contaminant concentrations in MW-2 through time, the historic trends in DO, DCO₂, and ORP measurement results, and the elevated dissolved manganese concentration in MW-2 (when compared to MW-3), it appears that natural attenuation of petroleum hydrocarbons is occurring at the site.

Table 5 MNA Indicator Comparison, June 13, 2004 Ukiah Hot Plant, Ukiah, California					
Groundwater Bioremediation Parameter	Units	Expected Trend for Source Well Related to Background	Impacted Well MW-2	Background Well MW-3	Consistent with Trend
Dissolved Oxygen	ppm ¹	Decreases	2.0	2.0	-- ²
Dissolved Carbon Dioxide	ppm	Increases	52	54	--
Oxidation-Reduction Potential	mV ³	Decreases	46	45	--
Dissolved Manganese	mg/L ⁴	Increases	0.52	0.20	Yes
Sulfate	mg/L	Decreases	40	27	No
Alkalinity	mg/L	Increases	120	130	--
1. ppm: parts per million 2. --: Results too similar to determine a trend 3. mV: millivolts 4. mg/L: milligrams per Liter					

Discussion and Recommendations

- TPHMO and TPHD were not detected in any groundwater sample collected.
- Natural attenuation of petroleum hydrocarbons appears to be occurring at the site.

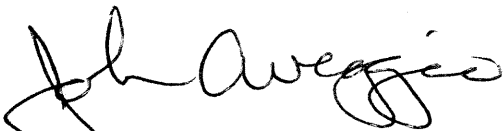
SHN recommends two additional quarters of groundwater monitoring to confirm the decreasing trends in contaminant concentrations. Prior to groundwater sampling, wells will be checked for depth to water, and monitored for DO, DCO₂, and ORP. Wells will be purged of approximately three well casing volumes prior to sampling. During well purging, groundwater will be monitored for temperature, pH, and conductivity. Groundwater samples will be analyzed for TPHMO and TPHD.

SHN will complete and submit the next quarterly monitoring report, no later than 60 days following the quarterly sampling event. The letter report will include a description of the monitoring and sampling activities, a summary of results, analytical reports, groundwater elevations, and groundwater contour maps. An annual summary will also be included with the fourth quarter 2005 monitoring report. The next quarterly groundwater-monitoring event is scheduled for September 2005.

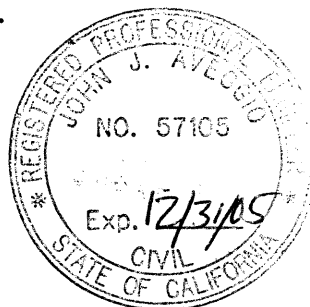
If you have any questions regarding the work completed, please call me at 707/441-8855.

Sincerely,

SHN Consulting Engineers & Geologists, Inc.



John Aveggio, P.E.
Project Manager



JJA/RMR:med

Attachments:

1. Field Notes
2. Historic Monitoring Data
3. Laboratory Analytical Reports

copy w/attach: Mr. Geoff Boraston, Granite Construction
Mr. Jordan Main, Granite Construction
Mendocino County Department of Environmental Health

References Cited

- Barden, M.J., 2002. Natural Attenuation for Remediation of Contaminated Sites #571. National Groundwater Association Short Course. Westerville, Ohio.
- NGI. (1987). *Geologic Investigation of the Existing York Ranch Wood Waste Disposal Facility Operated by Louisiana Pacific Corporation near Calpella, Mendocino County, California*. Eureka: NGI.
- SHN Consulting Engineers & Geologists, Inc. (2004). *Monitoring Well Installation and First Quarter 2004 Groundwater Monitoring Report, Ukiah Hot Plant, Ukiah, California; Case No. 1NMC545*. Eureka: SHN.
- . (2003). *Environmental Site Assessment, Ukiah Hot Plant, Ukiah, California*. Eureka: SHN.
- Wiedemeier, T.H., 2002. Natural Attenuation for Remediation of Contaminated Sites #571. National Groundwater Association Short Course. Westerville, Ohio.
- Wiedemeier, T.H., Wilson, J.T., Kampbell, D.H., Miller, R. N., Hansen, J.E., 1999. Technical Protocol for Implementing Intrinsic Remediation with Long-Term Monitoring for Natural Attenuation of Fuel Contamination Dissolved in Groundwater. Air Force Center for Environmental Excellence, Technology Transfer Division, San Antonio Texas.



CONSULTING ENGINEERS & GEOLOGISTS, INC.

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 812 W. Wabash • Eureka, CA 95501 • Tel: 707.442.8835 • FAX: 707.441.8877 • E-mail: shninfo@shn-cngr.com

DAILY FIELD REPORT

JOB NO. # 001133.207

Page 1 of 1

PROJECT NAME UKIAH HOT PLANT	CLIENT/OWNER GRANITE CONST.	DAILY FIELD REPORT SEQUENCE NO 2	
GENERAL LOCATION OF WORK UKIAH, CA	OWNER/CLIENT REPRESENTATIVE JORDAN MAIN	DATE 6/13/05	DAY OF WEEK MONDAY
TYPE OF WORK QUARTERLY SAMPLING	WEATHER CLEAR / WARM	PROJECT ENGINEER / SUPERVISOR JOHN AVEGGA / R. REUBER	
SOURCE & DESCRIPTION OF FILL MATERIAL	KEY PERSONS CONTACTED JORDAN MAIN	TECHNICIAN TOD E. BURLESON	

DESCRIBE EQUIPMENT USED FOR HAULING, SPREADING, WATERING, CONDITIONING, & COMPACTING.

0950 ARRIVED ON SITE, CHECKED IN W/ JORDAN MAIN AT OFFICE (3, 1, 2)
VIA PHONE.

1000 BEGAN REMOVING CAPS & LIDS ON ALL 3 WELLS.

1007 STARTED TAKING WATER LEVELS DECONING THE SOUNDER AFTER EACH WELL BY SCRUBBING WITH LIQUINOX THEN RINSING W/ D.T. WATER, DECON WATER CAUGHT IN WASH TUB.

1030 STARTED TAKING D.O., DISS. CO₂, & ORP READINGS, BEGINNING WITH MW-3, ~~THE~~ ¹
~~THE~~ ² ~~THE~~ ³

1055 BEGAN PURGING MW-3 WITH DISP. BAILER, PURGE WATER CAUGHT & STORED (3)
IN 4 GALLON GRAD. BUCKET & STORED ON SITE IN LABELED SS GAL. DRUM.

1130 BEGAN TAKING READINGS & PURGING MW-1 WITH ITS BAILER, CAPTURING
PURGE WATER IN 4 GAL. BUCKET AND STORING ON SITE IN SS GAL.
DRUM ON SITE.

1235 BEGAN TAKING READINGS & PURGING MW-2 WITH ITS BAILER, PURGE
WATER CAUGHT & STORED ON SITE IN SS GALLON DRUM.

1330 BEGAN TAKING DTW READINGS, DECON SOUNDER AFTER EACH WELL.

1340 BEGAN SAMPLING MW-3 W/ ITS BAILER, SECURED CAP & LID.

1405 BEGAN SAMPLING MW-1 W/ ITS BAILER, SECURED CAP & LID.

1420 BEGAN SAMPLING MW-2 W/ ITS BAILER, SECURED CAP & LID.

1438 CHECKED OUT MAIN OFFICE

1445 OFF SITE

1510 DROPPED OFF SAMPLES ALPHA LAB.

COPY GIVEN TO

R. REUBER

REPORTED BY

TOD E. BURLESON

**CONSULTING ENGINEERS & GEOLOGISTS, INC.**

812 W. Wabash • Eureka, CA 95501-2138 • 707/441-8855 • FAX: 707/441-8877 • shninfo@shn-engr.com

Equipment Calibration Sheet

Name:

TOD E. BURLESON

Project Name:

UKIAH HOT PLANT / GRANITE

Reference No.:

001133.207

Date:

6/13/05

Equipment:

☒ pH & EC☐ PID☐ GTCO₂☐ GTLEL☐ Turbidity☐ Other _____

Description of Calibration Procedure and Results:

PH & EC METER CALIBRATED USING A 2 BUFFER METHOD
WITH A PH 7.01 AND 4.01, METER WAS SET EXACTLY
TO PH 7.01 & 4.01 AND CONDUCTIVITY SET AT ~~700~~ 1413
MICROSIEMENS.



CONSULTING ENGINEERS & GEOLOGISTS, INC.

493 S. Main St. • Wills CA 95490-2138 • 707/459-4518 • FAX: 707/459-1884 • TMHASSOC@saber.net

Water Sampling Data Sheet

Project Name:	GRANITE CONST. UKIAH HOT P	Date/Time:	6/13/98
Project No.:	001133.207	Sampler Name:	TOD E. BURLESON
Location:	UKIAH, CA	Sample Type:	GROUND WATER
Well #:	MW-1	Weather:	CLEAR / WARM
Hydrocarbon Thickness/Depth (feet):		Key Needed:	YES - DOLPHIN

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
19.37	-	13.92	=	5.45	x	.653	=	3.56 x 3 = 10.68

Time	DO (ppm)	CO ₂ (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
1130							0	
1135	2mg/L	52	042				1.50	
1152	V			265	73.6	6.77	4.50	4.50
1214				267	71.7	6.76	8.50	7.50
1225				262	72.8	6.86	10.50	
	NO FLOW							
	THRU							
	CELL							
1405			SAMPLED	MW-1				

Purge Method: HAND BAIL

Total Volume Removed: 10.50 (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
MW-1	1 LITER BR. GLASS.	NONE	ALPHA	TPHD / MO
"	1 LG. PLASTIC	" "	" "	NITRATE, SULFATE, ALKALINITY
"	1 MED. PLASTIC	" "	" "	DISS. IRON, DISS. MANG.

Well Condition: Good

Remarks: RECHARGED TO 13.96 @ 1335



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Water Sampling Data Sheet

Project Name:	GRANITE CONST. UKIAH HOT PLANT	Date/Time:	6-13-95
Project No.:	001133.207	Sampler Name:	TOD E. BURLESON
Location:	UKIAH, CA	Sample Type:	GROUND WATER
Well #:	MW-2	Weather:	CLEAR WINDY WARM
Hydrocarbon Thickness/Depth (feet):		Key Needed:	DOLPHIN

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
18.74	-	11.72	=	7.02	x	0.163	=	1.14 x 3 = 3.43

Time	DO (ppm)	CO ₂ (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
1240							Ø	
1242	2	52	046				.25	
1300	✓			312	75.4	6.53	1.25	
1307	✓			318	72.4	6.58	2.50	
1314	N ^o			327	73.5	6.72	3.50	WENT DRY
	Flow							
	THRU							
	CELL							
1420			SAMPLED	MW-2				

Purge Method: HAND BAIL

Total Volume Removed: 3.50 (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
MW-2	1 liter Br. GLASS	NONE	ALPHA	TPHD / MO
" "	" 1 LG CONT.	Ø	" "	NITRATE, SULFATE, ALK.
" "	1 SM. CONT	Ø	" "	DISS. IRON, DISS. MANB.

Well Condition: GOOD

Remarks: RECHARGED TO 12.33 @ 1338



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Water Sampling Data Sheet

Project Name:	<u>GRANITE CONST. / UKIAH HOT PLANT</u>	Date/Time:	<u>6-13-95</u>
Project No.:	<u>001133-207</u>	Sampler Name:	<u>TOD E. BURLESON</u>
Location:	<u>UKIAH, CA.</u>	Sample Type:	<u>GROUND WATER</u>
Well #:	<u>MW-3</u>	Weather:	<u>CLEAR / WARM</u>
Hydrocarbon Thickness/Depth (feet):		Key Needed:	<u>DOLPHIN</u>

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
<u>20.32</u>	-	<u>14.62</u>	=	<u>5.70</u>	x	<u>0.163</u>	=	<u>.93</u> $\times 3 = 2.79$

Time	DO (ppm)	CO ₂ (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
1025							<u>0</u>	
1035	<u>2 mg/L</u>	<u>54 mg/L</u>	<u>045</u>				<u>0.25</u>	
1104				<u>328</u>	<u>74.9</u>	<u>6.56</u>	<u>1.00</u>	
1112				<u>340</u>	<u>71.1</u>	<u>6.62</u>	<u>2.00</u>	
1119				<u>322</u>	<u>70.7</u>	<u>6.61</u>	<u>3.00</u>	
	<u>NO</u>							
	<u>FLOW</u>							
	<u>THRU</u>							
	<u>CELL</u>							
1340				<u>SAMPLE</u>	<u>TIME</u>			

Purge Method: HAND BAILTotal Volume Removed: 3.00 (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative/Type	Laboratory	Analyses
<u>MW-3</u>	<u>1 LITER BR. GLASS</u>	<u>NONE</u>	<u>ALPHA</u>	<u>TPHD / MO</u>
<u>"</u>	<u>1 Lg. CONT.</u>	<u>Ø</u>	<u>" "</u>	<u>NITRATE, SULFATE, ALK.</u>
<u>"</u>	<u>1 Sm. CONT.</u>	<u>Ø</u>	<u>" "</u>	<u>DISS. FLOW, DISS. MANB.</u>

Well Condition: GOODRemarks: RECHARGED TO 14.62 @ 1331

Client Name: **GRANITE CONSTRUCTION HOT PLANT UKIAH**

The water from your site:

**4201 NORTH STATE STREET UKIAH,
CA RWQCB CASE # 1NMC545**

SHN ref # **001133.207**

Collected On: **3/25/05**

Has been tested and certified as acceptable to be discharged into the City of Eureka municipal sewer system.

Amount Discharged:

24 GALLONS

Date Discharged:

5/23/05

Certified by:

DAVID R. PAINE

SHN CONSULTING ENGINEERS & GEOLOGISTS, INC.

City of Eureka Wastewater Discharge Permit #65

Table 2-1 Historic Groundwater Elevations Ukiah Hot Plant, Ukiah, California				
Location	Date	Top of Casing Elevation (feet)¹	Depth to Water² (feet)	Groundwater Elevation (feet)¹
MW-1	03/22/04	645.05	13.28	631.77
	06/21/04		14.85	630.20
	09/08/04		14.69	630.36
	12/21/04		13.79	631.26
	03/25/05		11.65	633.40
	06/13/05		13.92	631.13
MW-2	03/22/04	642.56	11.77	630.79
	06/21/04		12.77	629.79
	09/08/04		12.44	630.12
	12/21/04		11.53	631.03
	03/25/05		10.45	632.11
	06/13/05		11.72	630.84
MW-3	03/22/04	643.71	13.71	630.00
	06/21/04		15.81	627.90
	09/08/04		15.75	627.96
	12/21/04		14.08	629.63
	03/25/05		12.68	631.03
	06/13/05		14.62	629.09
1. Referenced to NAVD88 2. Below top of casing				

Table 2-2
Historic Groundwater Analytical Results
Ukiah Hot Plant, Ukiah, California
(in ug/L)¹

Sample Location	Date	TPHMO²	TPHD²
MW-1	03/23/04	<100 ³	110
	06/21/04	<100	<50
	09/08/04	<100	<50
	12/21/04	<100	<50
	03/25/05	<100	85
	06/13/05	<100	<50
MW-2	03/22/04	730	2,000
	06/21/04	1,500	3,000
	09/08/04	210	470
	12/21/04	<100	80
	03/25/05	170	480
	06/13/05	<100	<50
MW-3	03/22/04	110	<50
	06/21/04	<100	<50
	09/08/04	<100	<50
	12/21/04	<100	<50
	03/25/05	<100	53
	06/13/05	<100	<50

1. ug/L: micrograms per Liter

2. Total Petroleum Hydrocarbons as Motor Oil (TPHMO) and as Diesel (TPHD) analyzed in general accordance with EPA Method No. 8015M

3. <: Denotes a laboratory value that is "less than" the method detection limit.

Table 2-3
Historic DO, DCO₂, and ORP Measurement Results
Ukiah Hot Plant, Ukiah, California

Sample Location	Date	DO ¹ (ppm) ²	DCO ₂ ³ (ppm)	ORP ⁴ (mV) ⁵
MW-1	03/23/04	0.58	20	243
	06/21/04	0.82	40	139
	09/08/04	0.66	40	51
	12/21/04	2.02	40	63
	03/25/05	0.20	46	68
	06/13/05	2.00	52	42
MW-2	03/22/04	0.58	40	248
	06/21/04	0.64	40	80
	09/08/04	0.61	60	-16
	12/21/04	0.90	40	22
	03/25/05	0.12	56	18
	06/13/05	2.00	52	46
MW-3	03/22/04	0.60	20	236
	06/21/04	0.64	60	153
	09/08/04	0.71	70	114
	12/21/04	1.03	40	89
	03/25/05	0.12	42	76
	06/13/05	2.00	54	45

1. DO: Dissolved Oxygen, field measured using portable instrumentation or a field test kit
2. ppm: Measurement concentration, in parts per million
3. DCO₂: Dissolved Carbon Dioxide, field measured using a field test kit
4. ORP: Oxidation-Reduction Potential measured using portable instrumentation
5. mV: millivolts



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27 June 2005

SHN Engineering

Attn: Roland Rueber

812 W. Wabash Ave

Eureka, CA 95501-2138

RE: Granite - Ukiah

Work Order: A506350

Enclosed are the results of analyses for samples received by the laboratory on 06/13/05 15:10. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Sheri Speaks

Sheri L. Speaks
Project Manager



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CHEMICAL EXAMINATION REPORT

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SHN Engineering
812 W. Wabash Ave
Eureka, CA 95501-2138
Attn: Roland Rueber

Report Date: 06/27/05 07:09
Project No: 001133.207
Project ID: Granite - Ukiah

Order Number
A506350

Receipt Date/Time
06/13/2005 15:10

Client Code
SHNEUR

Client PO/Reference

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	A506350-01	Water	06/13/05 14:05	06/13/05 15:10
MW-2	A506350-02	Water	06/13/05 14:20	06/13/05 15:10
MW-3	A506350-03	Water	06/13/05 13:40	06/13/05 15:10

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Sheri L. Speaks

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6/27/2005



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	METHOD	BATCH	PREPARED	ANALYZED	DILUTION	RESULT	PQL	NOTE
MW-1 (A506350-01)			Sample Type: Water			Sampled: 06/13/05 14:05		
Metals (Dissolved) by EPA 200 Series Methods								
Iron, dissolved	EPA 200.7	AF51701	06/17/05	06/21/05	1	ND mg/l	0.10	
Manganese, dissolved	"	"	"	"	"	0.79 "	0.020	
Conventional Chemistry Parameters by APHA/EPA Methods								
Bicarbonate Alkalinity as CaCO3	SM2320B	AF51337	06/13/05	06/13/05	1	110 mg/l	5.0	
Carbonate Alkalinity as CaCO3	"	"	"	"	"	ND "	5.0	
Hydroxide Alkalinity as CaCO3	"	"	"	"	"	ND "	5.0	
Total Alkalinity as CaCO3	"	"	"	"	"	110 "	5.0	
Anions by EPA Method 300.0								
Nitrate as NO3	EPA 300.0	AF51319	06/14/05	06/14/05	1	ND mg/l	1.0	
Sulfate as SO4	"	"	"	"	"	9.0 "	0.50	
TPH by EPA/LUFT GC/GCMS Methods								
TPH as Diesel	8015DRO	AF52216	06/22/05	06/22/05	1	ND ug/l	50	
TPH as Motor Oil	"	"	"	"	"	ND "	100	
Surrogate: Tetraetracontane	"	"	"	"		73.2 %	20-152	

MW-2 (A506350-02)

Sample Type: Water

Sampled: 06/13/05 14:20

Metals (Dissolved) by EPA 200 Series Methods

Iron, dissolved	EPA 200.7	AF51701	06/17/05	06/21/05	1	ND mg/l	0.10
Manganese, dissolved	"	"	"	"	"	0.52 "	0.020

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	METHOD	BATCH	PREPARED	ANALYZED	DILUTION	RESULT	PQL	NOTE
MW-2 (A506350-02)								
			Sample Type: Water		Sampled: 06/13/05 14:20			
Conventional Chemistry Parameters by APHA/EPA Methods								
Bicarbonate Alkalinity as CaCO3	SM2320B	AF51337	06/13/05	06/13/05	1	120 mg/l	5.0	
Carbonate Alkalinity as CaCO3	"	"	"	"	"	ND "	5.0	
Hydroxide Alkalinity as CaCO3	"	"	"	"	"	ND "	5.0	
Total Alkalinity as CaCO3	"	"	"	"	"	120 "	5.0	
Anions by EPA Method 300.0								
Nitrate as NO3	EPA 300.0	AF51319	06/14/05	06/14/05	1	ND mg/l	1.0	
Sulfate as SO4	"	"	"	"	"	40 "	0.50	
TPH by EPA/LUFT GC/GCMS Methods								
TPH as Diesel	8015DRO	AF52216	06/22/05	06/22/05	1	ND ug/l	50	
TPH as Motor Oil	"	"	"	"	"	ND "	100	
Surrogate: Tetraetracontane	"	"	"	"		61.2 %	20-152	

MW-3 (A506350-03)

Sample Type: Water

Sampled: 06/13/05 13:40

Metals (Dissolved) by EPA 200 Series Methods

Iron, dissolved	EPA 200.7	AF51701	06/17/05	06/21/05	1	ND mg/l	0.10
Manganese, dissolved	"	"	"	"	"	0.20 "	0.020

Conventional Chemistry Parameters by APHA/EPA Methods

Bicarbonate Alkalinity as CaCO ₃	SM2320B	AF51337	06/13/05	06/13/05	1	130 mg/l	5.0
Carbonate Alkalinity as CaCO ₃	"	"	"	"	"	ND "	5.0
Hydroxide Alkalinity as CaCO ₃	"	"	"	"	"	ND "	5.0
Total Alkalinity as CaCO ₃	"	"	"	"	"	130 "	5.0

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Sheri Speaks

Sheri L. Speaks
Project Manager

6/27/2005



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Alpha Analytical Laboratories, Inc.

	METHOD	BATCH	PREPARED	ANALYZED	DILUTION	RESULT	PQL	NOTE
MW-3 (A506350-03)								
			Sample Type: Water			Sampled: 06/13/05 13:40		
Anions by EPA Method 300.0								
Nitrate as NO ₃	EPA 300.0	AF51319	06/14/05	06/14/05	1	ND mg/l	1.0	
Sulfate as SO ₄	"	"	"	"	"	27 "	0.50	
TPH by EPA/LUFT GC/GCMS Methods								
TPH as Diesel	8015DRO	AF52216	06/22/05	06/22/05	1	ND ug/l	50	
TPH as Motor Oil	"	"	"	"	"	ND "	100	
Surrogate: Tetraetracontane	"	"	"	"		67.6 %	20-152	

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Client PO/Reference

SourceResult

Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Analyte(s)	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch AF51701 - EPA 3005A										
Blank (AF51701-BLK1)					Prepared: 06/17/05 Analyzed: 06/21/05					
Iron, dissolved	ND	0.10	mg/l							
Manganese, dissolved	ND	0.020	"							
LCS (AF51701-BS1)					Prepared: 06/17/05 Analyzed: 06/21/05					
Iron, dissolved	2.05	0.10	mg/l	2.00		102	85-115			
Manganese, dissolved	0.207	0.020	"	0.200		104	85-115			
LCS Dup (AF51701-BSD1)					Prepared: 06/17/05 Analyzed: 06/21/05					
Iron, dissolved	2.06	0.10	mg/l	2.00		103	85-115	0.487	20	
Manganese, dissolved	0.207	0.020	"	0.200		104	85-115	0.00	20	
Duplicate (AF51701-DUP1)					Source: A506256-01 Prepared: 06/17/05 Analyzed: 06/21/05					
Iron, dissolved	ND	0.10	mg/l		ND				20	
Manganese, dissolved	0.00190	0.020	"		ND				20	
Matrix Spike (AF51701-MS1)					Source: A506256-01 Prepared: 06/17/05 Analyzed: 06/21/05					
Iron, dissolved	2.11	0.10	mg/l	2.00	ND	106	70-130			
Manganese, dissolved	0.214	0.020	"	0.200	ND	106	70-130			
Matrix Spike Dup (AF51701-MSD1)					Source: A506256-01 Prepared: 06/17/05 Analyzed: 06/21/05					
Iron, dissolved	2.06	0.10	mg/l	2.00	ND	103	70-130	2.40	20	
Manganese, dissolved	0.209	0.020	"	0.200	ND	104	70-130	2.36	20	

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Conventional Chemistry Parameters by APHA/EPA Methods - Quality Control

Analyte(s)	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch AF51337 - General Preparation										
Duplicate (AF51337-DUP1)	Source: A506306-23			Prepared & Analyzed: 06/13/05						
Carbonate Alkalinity as CaCO ₃	ND	5.0	mg/l		ND				20	
Bicarbonate Alkalinity as CaCO ₃	325	5.0	"		320			1.55	20	
Hydroxide Alkalinity as CaCO ₃	ND	5.0	"		ND				20	
Total Alkalinity as CaCO ₃	325	5.0	"		320			1.55	20	

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Client PO/Reference

Anions by EPA Method 300.0 - Quality Control

Analyte(s)	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch AF51319 - General Preparation										
Blank (AF51319-BLK1)				Prepared: 06/13/05 Analyzed: 06/14/05						
Nitrate as NO3	ND	1.0	mg/l							
Sulfate as SO4	ND	0.50	"							
LCS (AF51319-BS1)				Prepared: 06/13/05 Analyzed: 06/14/05						
Nitrate as NO3	4.4	1.0	mg/l	4.43		99.3	90-110			
Sulfate as SO4	8.18	0.50	"	8.00		102	90-110			
LCS Dup (AF51319-BSD1)				Prepared: 06/13/05 Analyzed: 06/14/05						
Nitrate as NO3	4.4	1.0	mg/l	4.43		99.3	90-110	0.00	20	
Sulfate as SO4	8.18	0.50	"	8.00		102	90-110	0.00	10	
Duplicate (AF51319-DUP1)				Source: A506355-01		Prepared: 06/13/05 Analyzed: 06/14/05				
Nitrate as NO3	8.5	5.0	mg/l		9.0			5.71	20	
Sulfate as SO4	ND	2.5	"		23				20	
Matrix Spike (AF51319-MS1)				Source: A506355-01		Prepared: 06/13/05 Analyzed: 06/14/05				
Nitrate as NO3	54	4.0	mg/l	44.4	9.0	101	80-120			
Sulfate as SO4	63.1	2.0	"	40.0	23	100	80-120			
Matrix Spike Dup (AF51319-MSD1)				Source: A506355-01		Prepared: 06/13/05 Analyzed: 06/14/05				
Nitrate as NO3	54	4.0	mg/l	44.4	9.0	101	80-120	0.00	20	
Sulfate as SO4	63.0	2.0	"	40.0	23	100	80-120	0.159	10	

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TPH by EPA/LUFT GC/GCMS Methods - Quality Control

Analyte(s)	Result	PQL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch AF52216 - EPA 3510B Water										
Blank (AF52216-BLK1)				Prepared & Analyzed: 06/22/05						
TPH as Diesel	ND	50	ug/l							
TPH as Motor Oil	ND	100	"							
Surrogate: Tetratetracontane	13.5		"	25.0		54.0	20-152			
LCS (AF52216-BS1)				Prepared & Analyzed: 06/22/05						
TPH as Diesel	1390	50	ug/l	2000		69.5	52-136			
TPH as Motor Oil	1620	100	"	2000		81.0	58-138			
Surrogate: Tetratetracontane	18.9		"	25.0		75.6	20-152			
Matrix Spike (AF52216-MS1)				Source: A506350-01		Prepared & Analyzed: 06/22/05				
TPH as Diesel	1350	50	ug/l	2000	ND	67.5	61-129			
TPH as Motor Oil	1610	100	"	2000	ND	80.5	47-147			
Surrogate: Tetratetracontane	15.0		"	25.0		60.0	20-152			
Matrix Spike Dup (AF52216-MSD1)				Source: A506350-01		Prepared & Analyzed: 06/22/05				
TPH as Diesel	1440	50	ug/l	2000	ND	72.0	61-129	6.45	25	
TPH as Motor Oil	1690	100	"	2000	ND	84.5	47-147	4.85	25	
Surrogate: Tetratetracontane	20.1		"	25.0		80.4	20-152			

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Notes and Definitions

DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference
PQL Practical Quantitation Limit

